

**CLAIMS**

1. A process for preparing a soluble whey protein hydrolysate containing bioactive peptides comprising hydrolysing a whey protein-containing substrate with one or more enzymes characterised in that
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- i) the enzyme is a heat labile protease,
- ii) the hydrolysis is conducted at a temperature of between about 30°C and 70°C at a pH of about 6 to about 8.5 when said enzymes is a neutral proteases, and at a pH of about 3.5 to about 5 when said enzyme is an acid protease and 3.5 to 5.0 where said enzyme is an acid protease,
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- iii) the hydrolysis is terminated when a degree of hydrolysis of no greater than 15% has been reached,
- iv) the hydrolysis is terminated by deactivating said one or more enzymes, and
- v) the conditions for said step iv) are sufficiently mild to avoid substantial denaturation peptides in said hydrolysate.
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2. A process as claimed in claim 1 wherein said substrate is sweet whey or sweet whey protein concentrate.
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3. A process as claimed in claim 1 or 2 wherein said enzyme is selected from the group consisting of Protease P6, Protease A, Protease M, Peptidase, Neutrase, Validase and AFP 2000 (all as herein defined).
4. A process as claimed in claim 1, 2 or 3 wherein said enzyme deactivating step iv) comprises heat deactivation.
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5. A process according to claim 4 wherein said heat deactivation comprises heating and hydrolysate for up to ten seconds to a temperature up to 95°C.
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6. A process according to claim 4 wherein said hydrolysis has been conducted at a temperature of below 65°C, wherein said heat deactivating step is conducted at 65°C to 70°C for from 10 seconds to 15 minutes.
7. A process according to claim 4 wherein said hydrolysis has been conducted at a temperature below 60°C, wherein said heat deactivating step is conducted at 60° to 65°C for from 10 seconds up to 30 minutes.
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8. A process as claimed in claim 1, 2 or 3 wherein said enzyme deactivating step comprises altering the pH of said whey protein-containing substrate to a pH at which said protease is not active.
- 5 9. A process as claimed in claim 8 wherein said enzyme deactivating step includes heat deactivation as claimed in any one of claims 4 to 7.
10. A process as claimed in claim 1, 2 or 3 wherein said enzyme deactivating step iv) comprises subjecting said hydrolysate to ultrafiltration with an ultrafiltration membrane having a nominal molecular weight cutoff in the range of 10-500kDa.
- 10 11. A process as claimed in any one of the preceding claims wherein said enzyme is immobilised on an inert support during said hydrolysis step ii).
- 15 12. A process as claimed in claim 11 wherein said inert support is Roehm Eupergit, carrageenan particles, chitosan particles or any other suitable inert support material.
13. A process as claimed in any one of the preceding claims wherein the degree of hydrolysis is about 3-5%.
- 20 14. A process as claimed in any one of the preceding claims wherein the substrate also contains lactose, in an amount of about 5% by weight or higher.
- 25 15. A process as claimed in any one of the preceding claims wherein said lactose content is about 10% by weight or higher.
16. A process as claimed in claim 14 or 15 wherein the amount of lactose present in the substrate is up to about 30% by weight.
- 30 17. A process as claimed in claim 14 or 15 wherein the amount of lactose present in the substrate is up to about 50% by weight.
18. A process as claimed in any one of claims 14 to 17, wherein the substrate is also treated with lactase and/or  $\beta$ -galactosidase, either before, during or after the whey protein hydrolysis, to hydrolyse the lactose to galactose and glucose and synthesize galacto-oligosaccharides.
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19. A process as claimed in any one of the preceding claims wherein the hydrolysate so prepared contains one or more of the bioactive peptides selected from the group consisting of AFE, LFSH, ILKEKH, LIVTQ, MKG, LDIQK, VF, ALPMH, VTSTAV, LHLPLP, LVYPFPGPIPNLQNIPP and LFRQ.
- 5 20. A non-bitter soluble whey protein hydrolysate produced by a process according to any one of claims 1 to 19.
- 10 21. A product as claimed in claim 20 wherein the degree of hydrolysis of the whey proteins is about 3 to 5%.
22. A product as claimed in either of claims 20 or 21 wherein the mean particle size of the whey proteins in the product is less than about 30 microns.
- 15 23. A product as claimed in claim 22 wherein said mean particle size is less than about 3 microns.
24. A product as claimed in any one of claims 20 to 23 which is substantially white in appearance.
- 20 25. A product as claimed in any one of claims 20 to 24 which also contains galacto-oligosaccharides.
- 25 26. A product as claimed in any one of claims 20 to 25 wherein one or more of said bioactive peptides is selected from the group consisting of AFE, LFSH, ILKEKH, LIVTQ, MKG, LDIQK, VF, ALPMH, VTSTAV, LHLPLP, LVYPFPGPIPNLQNIPP and LFRQ.
- 30 27. A food product containing a whey protein hydrolysate as claimed in any one of claims 20 to 26.
28. Any one or any combination of two or more of the bioactive peptides selected from the group consisting of AFE, LFSH, ILKEKH, LIVTQ, MKG, LDIQK, VF, ALPMH, VTSTAV, LHLPLP, LVYPFPGPIPNLQNIPP and LFRQ.
- 35 29. A method of reducing systolic blood pressure in a subject which comprises administering to that subject an effective amount of a product as claimed in any one of claims 20 to 28.

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30. A method as claimed in claim 29 which comprises administering an effective amount of a product according to claim 26.

5 31. A method as claimed in claim 29 which comprises administering an effective amount of a peptide or a combination of peptides as claimed in claim 28.

